Frankly Speaking

Looking Ahead

THE future looks bright for Traffic Engineering. With the revival of Peace, traffic control has become the number one problem of all communities in the country. This is apparent from the prominent space devoted by the newspapers to the traffic problem.

Everywhere there is evidence of traffic engineers in cities and states being given more authority and more money to once again carry on the good work they were doing prior to the war. Municipal authorities in the larger cities without traffic engineers are giving serious consideration to the need for such a service. In many smaller cities authorities are realizing they need technical assistance to relieve the traffic congestion that is fast bringing on economic stagnation.

Yes, the future is bright for Traffic Engineers. But, are we prepared to make the best of this golden opportunity. As a whole, the answer is Yes! There is, however, one vital need and that is additional manpower.

One of the major programs of the Institute of Traffic Engineers for 1946 should be directed towards obtaining this manpower and to see that the proper training is provided.

Robert A. Mitchell

Vice President, I.T.E.

Determining Parking Requirements by Study of Parking Habits

By S. T. Hitchcock * and Thos. E. Willier †

Inadequacies of parking facilities in central business districts have adversely affected motorists, business organizations, property owners, and government. The mere existence of a quantity of parking spaces is not always a solution to the parking problem because motorists have certain preferences which make some parking facilities acceptable while others are not even used. As a result, the lack of sufficient acceptable parking facilities in central business districts has been a factor in producing congestion and delays, encouraging decentralization, causing a reduction in business, and decreasing property tax revenues which are needed for governmental functions.

Although steps have been taken to meet the added requirements for facilities to serve motor vehicle traffic in downtown areas, the supply still lags far behind the demand. Most street systems in the congested business districts were not designed to provide for the fluid movements of automobiles, trucks, buses, streetcars and pedestrians. In addition to meeting the demands for movements of vehicles and pedestrians, these streets were used to provide storage space for the all-day and short-time parkers, and space for commercial vehicles to stand or stop while loading or unloading passengers or merchandise. Citizens, merchants and governmental officials now recognize the existence of those two interrelated problems and the need for improving traffic conditions in the congested areas. Some expedients for improving traffic movements and the parking of vehicles have been adopted and others are being considered.

It is generally agreed that the primary purpose of streets is to provide space for the movement of vehicles; parking being a secondary consideration. Too, it is agreed that the parking problem cannot be solved "at the curb." Where traffic congestion is evident in a business district, and additional street capacity is needed, it probably would not be economically justifiable to widen streets by acquiring high-value land or removing large buildings. Other methods which may feasibly be utilized to expedite traffic flow include adopting special parking regulations and restrictions or complete removal of curb parking in the business area. If these methods are adopted, the all-day parkers will be forced to use curb parking spaces outside of the congested district or to park in lots or storage garages. The short-time parkers also would require additional off-street space. Before removing curb parking, therefore, it is essential that provision be made for adequate off-street parking facilities. Failure to do so adequately is one reason for decentralization.

Inventory of Parking Facilities

The supply of available parking space, at the curb and off the street, can be ascertained by surveys. In such surveys, the space set aside for parking at the curb and the capacities of off-street parking lots and garages can be

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* Highway Engineer, Public Roads Administration.

† (Member I.T.E.) market and traffic analyst. At the time of preparing this paper he was research associate, Yale Bureau for Street Traffic Research.

measured and, through field observations, the turn-over of vehicles can be recorded. Off-street parking terminals can be inventoried to indicate the supply of parking spaces in terms of location, design, operation and other factors including services rendered and parking charges.

Determination of Parking Requirements

The problem of measuring parkers' demands and requirements is much more difficult than that of determining the supply of parking facilities. It is essential, however, that motorists' parking requirements be determined before plans are adopted for improving parking conditions. Several large stores have conducted travel habit and parking studies to ascertain the forms of transportation used by customers and to determine where persons who used automobiles parked their vehicles. A few cities have conducted similar studies by distributing questionnaires pertaining to motorists' parking habits and desires. The questions pertaining to the viewpoints of persons regarding whether or not they would use a particular kind of off-street parking terminal if it were available and how much they would pay for such use have not been found to be of much value. Opinion surveys of this character do not develop factual data pertaining to parkers' needs and they do not disclose (1) why persons choose respective parking places or (2) why they use particular forms of transportation. Answers to these two questions must be obtained, interpreted from a technical viewpoint, and used in the preparation of plans for meeting parkers' requirements as a part of the over-all plan for improving traffic conditions in metropolitan areas.

The Interview Method

Traffic in urban areas may be segregated for analysis into local traffic which originates and terminates within the metropolitan area, external-local traffic which originates or terminates within the metropolitan area, and into external traffic which passes completely through the urban area. For purposes of determining urban travel and parking habits, interviews have been conducted in households distributed uniformly on a geographical basis throughout a metropolitan area. In some of the smaller cities, it has been found desirable to use a sample of 10 per cent of the city households. In some of the larger cities, it has been equally satisfactory to use a sample of five per cent of the households. Briefly, the sample of dwellings has been selected from information shown on Sanborn maps, checked against and supplemented with information from Census statistics, city directories, public housing records and building permit files. Dwellings have been selected by field inspection in areas not listed in other sources, in order that complete coverage of a metropolitan area may be assured.

Household interviews reveal the travel and parking habits of traffic originating or terminating, or both, within the city limits. Traffic counts are made at critical points in a metropolitan area to check the data expanded from the interviews. To obtain the travel habits of traffic entering the area, data are obtained by interviewing motor vehicle drivers at points where the principal routes enter the city. Through a study of the relation between the total volume of traffic at these points and the number of interviews, the interview data may be expanded to reflect total travel habits of the entering traffic. Similarly, within the metropolitan area, the relationship between the total interviews and the total number of households in the city permits the expansion of the dwelling interviews to a total population and traffic basis. The survey information obtained in dwelling interviews within a city and at external traffic stations is coded and punched on tabulation

cards for mechanical sorting, tabulation and analysis.

To obtain information about parking habits, the travel habit schedule of inquiries was expanded to include inquiries about parking. While some other parking survey methods are limited to those persons who park their vehicles in particular locations, the household interview method obtains parking information not only from those persons but also from all auto drivers regardless of where they park. Replies to questions relative to travel habits and vehicle use which would prevail if conditions were normal may be used to supplement factual data collected.

Information Obtained

The following inquiries indicate the scope of the parking information being obtained in surveys for determining parking requirements:

1. Location of parking.
2. Duration of parking period.
3. Time of day when parked.
4. Kind of parking.
5. Amount paid and basis of rate paid.
6. Time to travel from parking place to destination.
7. Distance from parking place to destination.
8. Means of travel from parking place to destination.
9. Frequency of parking.
10. Reason for using the parking space.

Other information, such as trip purpose, occupation and industry, obtained as part of the trip description can be used to supplement these items.

In some cities, the parking problem was considered to be of less importance than in others and fewer inquiries were made relative to parking. A complete schedule of information was obtained in Savannah, Denver and Nashville. Fairly complete parking information was obtained in Memphis and Kansas City. In other cities, a few basic inquiries relative to location, duration and kind of parking were all that were considered necessary at the time the interviews were made.

Inventory information relative to available parking facilities has been collected in a few cities to supplement data available from personal interviews. The inventories relate to location, type, capacity, ownership, operation, fees charged and peak hours of use for respective parking facilities. Such information and the detailed parking study is limited to the downtown business area, where traffic and parking problems are most pronounced.

The interviews obtained in the metropolitan area surveys provide information relative to all types of trips. For the analysis of parking habits, however, it is more important to consider only the central business district since this is the area in which congestion warrants improvement of parking facilities. The trip information to be studied therefore is limited to auto trips with destinations in the central business district and to auto trips with "to" work, "to" shopping, or "to" other purposes. Return or "from" trips from this area, or trips with neither the origin or destination in the area, have no bearing on the parking habits of the traffic in the central business district.

Analysis in Savannah

Savannah, Ga., has a population, according to the 1940 Census, of 95,996 persons and a registration list of 16,587 passenger cars. The metropolitan area, including the city of Savannah, has a population of 117,970 persons and a passenger car registration list for Chatham County of 20,007 vehicles.

The interviews obtained in Savannah when tabulated yielded an average weekday total of approximately 25,900 auto-driver trips to various destinations, limited to the several types of "to" trips. Of this group, approxi-

mately 5,200 trips were to the central business district and these represent 20 per cent of all such trips made in the metropolitan area. Ninety-eight per cent of these trips (5,100) terminated at a parking space. The remaining two per cent brought passengers to the district and no parking was involved.

The central business district in Savannah consists of approximately 48 blocks adjacent to the river front. There are approximately 1,300,000 sq. ft. of street area in this district of which 375,000 sq. ft. are used for parking purposes at the curb with a capacity of approximately 2100 cars. This curb parking space represents 29 per cent of the total street area in the central business district. A small area between the business district and the river has additional space for the free parking of 200 vehicles. These spaces cannot be considered a part of the central business district parking facilities since many persons who work in that area park there.

In the development of Savannah, few off-street parking facilities have been provided. An inventory of parking spaces in the central business district, made at the time of the survey, shows a total of 2562 spaces of which 2094 or 82 per cent, are at the curb and 468, or 18 per cent, are off the street. In this latter group, the spaces are about evenly distributed between parking lots and storage garages. Because of the relatively small number of off-street parking spaces, the limited number of interview replies relating to parking in those places does not permit detailed analyses of parking habits of persons using those off-street facilities.

Many detailed tabulations were compiled from the Savannah interviews. From these data on parked vehicles a few significant summaries are presented with a brief statement emphasizing the more obvious parking habits.

Trip Purpose

Forty-six per cent of all auto-driver trips to the central business district are to work, 25 per cent are for shopping, and 15 per cent are for the purpose of transacting business. These total 86 per cent of all auto-driver trips and produce the bulk of the parking problem.

Trip purpose	Per cent of trips
Work	45.8
Transact business	15.4
Recreation	8.2
Shopping, important	6.9
Shopping, incidental	18.8
Other	4.9
All trips	100.0

TABLE I

Length of time parked	Per cent of trips			
	All trips	To work	For shopping	On business
Less than 30 min.	6.4	0.0	12.6	20.3
30-59 minutes	17.2	6.0	33.1	29.6
1-2 hours	17.7	6.3	38.0	18.8
2-3 hours	14.9	5.6	15.0	15.6
3-6 hours	14.2	23.7	0.0	4.3
6-8 hours	4.9	7.0	1.3	6.6
8-10 hours	16.1	34.2	0.0	2.4
10 hours and over	8.6	17.2	0.0	2.4
All parking	100.0	100.0	100.0	100.0

Length of Time Parked

The distribution of all auto-driver trips according to length of time parked as given in Table 1 shows no large segregation in any one time period.

An analysis of the length of time parked for the important trip purposes shows: (1) Fifty-one per cent of the cars driven to work are parked eight hours or more; (2) Forty-six per cent of the cars driven for shopping are parked for less than one hour and 84 per cent are parked less than two hours; (3) Fifty per cent of the cars used for business purposes during the day are parked for less than one hour and 69 per cent are parked for less than two hours.

A comparison of frequency of parking with the length of time parked shows that the infrequent parkers, in general, are the short-time parkers, less than four hours, whereas, the daily parkers who park 24 to 31 times a month, are the long-time parkers, 48

per cent parking eight hours a day or more.

The expanded interviews show that there is a relation between the length of time parked and the time used in walking from parking place to destination. Where more time is spent in such travel, a larger percentage of the people park longer. This is also true with relation to distance walked from parking place to destination.

The bulk of the cars parked at the curb are parked in the morning hours between 8 a. m. and noon when 53 per cent of the trips to the central business district are made. There is an increase in the trips and resultant parking in the central business district in the evening hours between 6 and 8 p. m. The following summary shows the distribution for all vehicle trips to the central business district:

Time periods	Per cent of trips
Before 8 a.m.	7.7
8-9 a.m.	20.1
9-10 a.m.	15.5
10-12 a.m.	17.2
Noon-2 p.m.	8.4
2-4 p.m.	6.5
4-6 p.m.	7.7
6-8 p.m.	12.9
After 8 p.m.	4.0
Daily total	100.0

Kind of Parking

The expanded interview data reveal that of the 3,035 auto-driver trips, 73 per cent of the cars ware parked along the curbs in unrestricted zones, 14 per cent along curbs in restricted zones, nine per cent in parking lots, three per cent in storage garages, and the remaining one per cent in other parking locations. Only five per cent of the auto drivers used pay facilities when parking in the central business district.

Kind of parking	Per cent of trips
Curb, unrestricted	72.8
Curb, restricted	13.9
Parking lot, free	6.9
Parking lot, pay	2.1
Garage, free	0.3
Garage, pay	2.6
Other	1.4

Curb parking predominates for all trip purposes. It is significant that 82 per cent of the cars driven to work are parked at the curb and that 75 per cent of those driven on business trips during the day are parked at the curb; whereas for shopping, recreation, and other trips more than 95 per cent of the parking is at the curb.

Parking-lot and garage parkers are frequent parkers. Seventy-two per cent of those parking in parking lots do so 20-34 times a month and 100 per cent of those parking in garages do so 20-29 times a month.

Walking Time

Forty-six per cent of the cars are parked close to the destination, presumably either at the curb or on the premises since the drivers of those cars reported less than one minute in traveling from the parking place to the destination. Only 7.6 per cent spend 10 minutes or more in traveling from parking places to destinations.

Time to travel from parking place to destination	Per cent of trips
Less than 1 min.	46.1
1-4 min.	28.9
5-9 min.	17.4
10 min.	5.2
Over 10 min.	2.4
All trips	100.0

There is little or no significant difference in the time spent in traveling from parking places to destinations for persons making trips for different purposes. This, however, may not be true in other cities with larger business districts, more off-street parking facilities, and stricter enforcement of parking regulations.

Distance to Destination

Forty-six per cent of all auto drivers walked less than 100 ft. from the places where their cars were parked to their destinations. Twenty-eight per cent walked 100 to 500 ft.; 13 per cent, 500 to 1,000 ft.; nine per cent, 1,000 to 2,000 ft., and only three per cent walked 2,000 ft. or more.

There is little difference between the

distance walked by persons making trips for different purposes except that those trips of a recreational nature do show a slightly greater number walking distances of two blocks than do trips for other purposes.

Walking was the only means of travel reported in traveling from parking places to destinations in Savannah.

Why Parking Space was Used

Information obtained in answer to the question "Why was parking space used?" did not disclose significant facts in Savannah. Seventy-nine per cent of all persons parking in the central business district reported that they parked where they did because it was close to their destination, 19 per cent because the space was free, and two per cent for other reasons. Replies to this inquiry in larger cities may reveal significant information not evident from the analysis of the Savannah data. Analyses of the answers to the other interview questions establish reasons for parking practices.

Frequency of Parking

The frequency with which persons parked their vehicles in the central business district is shown in the following summary:

Times per month	Per cent of trips
1	8.3
2-4	16.2
5-9	11.6
10-14	5.6
15-19	4.1
20-24	20.8
25-29	20.7
30-34	11.4
35 & over	1.3
All frequencies	100.0

The frequency 20-34 times per month, inclusive, includes the group which parked their vehicles daily depending on the number of days worked per month, which varies considerably between 24 and 31 times a month. This group includes 53 per cent of all the persons who parked their cars in the central business district.

An increase in persons driving to the central business district may be anticipated when restrictions in automobile travel are removed. In answer to the inquiry, "In making this trip if there were no wartime shortages or restrictions would you have made it as an auto driver?" 675 auto passengers and 1,220 bus and street-car passengers answered yes. This would represent an increase in trips to the central business district of 63 per cent for which parking facilities must be provided. It is probable that the actual increase will be a little less. This was found to be the case in another city of similar size where analysis of car occupancy and local transit trends would produce an actual increase of 70 per cent of the increase indicated in the replies to a similar inquiry.

CONCLUSIONS

The analysis of parking habits discloses the following parking requirements in the central business district which must be considered if the parking facilities are to be improved:

1. *Trip Purpose, Frequency of Parking, and Length of Time Parked.*—Forty-six per cent of all auto-driver trips to the central business district are to work. Fifty-one per cent of the workers park eight hours or longer, and 24 per cent park for four to eight hours. Ninety-three per cent of all such workers park regularly in the same manner.

Twenty-six per cent of all auto-driver trips to the central business district are for shopping. Forty-six per cent of the shoppers park for less than one hour and 38 per cent park from one to two hours.

Fifteen per cent of all auto-driver trips to the central business district are for business purposes. Fifty per cent of the business trips are for less than one hour and 19 per cent are from one to two hours.

2. *Distance and Time to Travel from Parking Place to Destination*—Forty-six per cent of the cars driven to the central business district are parked within a one-minute walk, or

within 100 ft., of the destination and 29 per cent within a one to five-minute walk, or within 100 to 500 ft., of the destination.

3. *Kind of Parking and Fees Paid*—Seventy-three per cent of the cars were parked at curbs in unrestricted zones, 14 per cent along curbs in restricted zones, nine per cent in parking lots, three per cent in storage garages, and the remaining one per cent in other facilities.

Since there is such a small number of spaces in off-street facilities in relation to the total number of spaces, and with no parking meters at the curb, there is little choice for parking. For this same reason, information relative to fees was not obtained in sufficient quantity for evaluation of parkers' ability and willingness to pay for parking facilities.

4. *Increased Traffic*—It is estimated that there will be an increase of not over 63 per cent in the number of auto-driver trips to the central business district and at least 45 per cent when all war-time restrictions are removed.

5. *General Conclusions.* — In addition to the specific requirements previously stated, consideration must be given to the nature of the demands of particular generators of traffic such as stores, offices and industrial and recreational units to properly locate, design and operate new parking terminals or to improve existing parking locations.

Comment on Method

It is realized that the success of this interview method is dependent upon the representativeness of the sample from which the information is drawn, as it is in any sampling procedure. Expanded trip data obtained from the interviews were in close agreement with traffic counts at control locations during peak traffic hours. During the midday and evening hours agreement was not so close. This should not affect questions relating to highway design since adequate design is primarily based on peak traffic. The peak in the demand for parking, however, occurs in the off-peak periods of traffic flow. Since data obtained for midday and evening hours cannot be used with the same assurance of accuracy as that obtained during peak traffic hours, the importance of obtaining this information on all trips is being emphasized in current surveys, particularly for those trips during off-peak hours for trip purposes other than work. Results from other cities should show improvement in method and data obtained.

The analyses and conclusions reflect only the requirements of parkers in Savannah. Although it is apparent that more data are desirable, the survey method described in this report is considered to be sound. The factual data which are available in Savannah can be applied to parking problems there, but specific parking requirements for that city, or in any city, cannot be reliably established until additional studies of parking habits reveal significant patterns relative to location, capacity, type, cost, and other characteristics.

When the opportunity presents itself the members of this committee should consider various survey techniques and report on them when such survey methods are investigated. The household interview method of collecting data on parking habits, as referred to in this report, is a new means of providing necessary information properly related to traffic volumes so that governmental officials, interested civic groups, business organizations and property owners can use it in the development of policies and procedures relating to the location, financing, design, construction and operation of parking facilities. The activation of a parking program based on these facts and policies should aid in the improvement of business activity and in the stabilization of economic values in the central business districts.

Modernization of Traffic Signals an Urgent Need

by HAROLD G. ECKHARDT, *Member, I.T.E.*
Asst. Chief Traffic Engineer, Division of Traffic Safety, Ohio Dept. of Highways

As the conclusion of the war approached, most political subdivisions set about to build up a shelf of postwar plans. Such plans contemplated the construction of new grade separation structures, divided highways, expressways and various other means for facilitating vehicular travel. Most of those proposals are in the higher brackets and involve large scale physical changes and extend over several years.

Nevertheless, there will be innumerable instances of roads — important feeder roads — intersecting at grade where positive protection is essential. At such intersections untouched by the magic wand of the designer one very positive means of protection is that of signalized control. Generally such intersections have previously been equipped with traffic signals but in too many cases the equipment is of a vintage not designed or intended to do the new and more important job it is called upon to perform under the changed traffic conditions.

Hence, it appears that authorities of the local subdivisions could well take stock of the existing signal equipment to determine whether it is capable of delivering the efficient traffic control so necessary in today's transportation scheme.

Startling Improvements Made

Traffic signals, over the past few years, have evolved into veritable thinking, calculating, electrical machines capable of a surprising degree of acumen in handling complex traffic loads. One need not extend his memory too far in retrospect to recall the drum type of controller, the plain, colored glass lenses and the inflexible cycle of operation. What changes time hath wrought! Today we take for granted such improvements as traffic actuation, four thousand-hour lamps and multiphase co-ordination.

As an example of the extraordinary situations so ably ironed out by modern equipment, witness the uncanny exactness with which traffic is expedited and protected at an intersection in one of our largest cities. A modern, divided highway intersects with an important secondary highway and, for good measure, a multi-track, main line railroad parallels the main vehicular artery. Even superficial consideration will place before the imagination a parade of hair-raising traffic problems any one of which would constitute a major challenge to the ingenuity of the Traffic Engineer. Yet, under the smooth but stern domination of an ever-alert electrical genii, traffic is kept out of danger and fed into and through the complex intersection like the methodical functioning of a production line. No, it's not done with mirrors—but with electronics—traffic actuation at its best.

Available to All

The manufacturer of traffic signal equipment has pulled many an electrical and mechanical rabbit out of the hat and his efforts cannot be minimized. On the other side of the ledger, the user — the Traffic Engineer — has reached into his experience and has brought forth a carefully selected set of specifications which, through the

efforts of the Institute of Traffic Engineers, have been adopted as standard by most manufacturers. Because of these standards, the smaller communities that cannot afford the full time services of a Traffic Engineer, can be assured of proven qualities in the signal equipment that they have occasion to purchase.

Too frequently a signal, once installed, becomes a "taken for granted" fixture like the surface of the roadway, a guard rail or a curb. It deserves better treatment; it needs occasional maintenance if it is to deliver its best control facilities. What is less authoritative than an unpainted signal head equipped with dirt-covered reflectors and lenses or with a controller that monotonously grinds out a steady sequence of color indications regardless of the delaying effect on traffic? Not only is that equipment lacking in authority, but it almost becomes a hazard and certainly makes for costly vehicle operation. How much better if that signal were strictly commanded by an up-to-date control mechanism to adjust its reds, greens and yellows to the characteristics of traffic loads during the various peak and off-peak periods during the normal day.

Changes Sometimes Necessary

An example of the result of forgetfulness or complacency with its signal equipment occurred recently in a midwestern city. An ordinary flashing caution signal was installed at a T intersection with the intermittent red exhibited to but one side of the cross bar of the T. The other half of the cross bar and the stem of the T carried a state route, and traffic on those approaches was given the priority of movement. Improvements were made so that the state route was transferred to another thoroughfare. Yet, for months the STOP requirement of the flashing red continued to stop traffic with no justification whatever. Investigation proved the lack of need for such operation and the obvious correction was effected which yielded much greater efficiency.

Similar cases must exist by the hundreds throughout the country and with the very detrimental effect of discouraging respect and obedience to all traffic control devices.

Hence it seems appropriate here to make a plea to all political subdivisions to take stock of their signal equipment, gauge the necessity of the installations and measure the effectiveness of the existing control methods. Then, after a careful appraisal, plan to replace the obsolete and inefficient units with the more modern, the better adapted types. The time, effort and funds so expended will surely pay off in more expeditious traffic movement, better protection and less costly up-keep.

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ILLINOIS SUPERHIGHWAY LAW DECLARED VALID

Validity of a 1943 Illinois law creating a State Superhighway Commission to build toll highways has been upheld in an opinion handed down by the Illinois Supreme Court.

The opinion cleared the way for the commission to go ahead again with plans to build high-speed toll highways between Chicago and St. Louis, Chicago and Rockford, and East St. Louis to the Indiana state line.

The high state court reversed the Sangamon County Circuit Court, which had found the act invalid on the grounds it delegated "unlimited and arbitrary" power to the five commissioners. The Supreme Court found that the commission's powers to select routes and build highways was "ministerial" and not a delegation of legislative functions.

Under the statute the commission is empowered to issue revenue bonds for financing toll superhighways.—*Transport Topics.*

Speed and Accident Control Through Signalization

by EDWIN F. KOESTER, *(Mem. I.T.E.)*
City traffic engineer, Wilmington, Del.

AN ELDERLY man, carrying a home-baked cake to a nearby church bazaar, provided the culminating episode that in 1937 led to the signalization of two and one-quarter miles of an arterial highway through the City of Wilmington, Del. Killed by a swiftly moving car as he was crossing Pennsylvania Avenue, the unfortunate victim focused attention upon the many accidents of similar nature that had been attributed to lack of speed control, and dispelled the official lethargy which had attended former discussions of regulatory measures.

Plans that had been held in abeyance were again checked, and it became evident that the primary decision to be made concerned the method of control. The arterial highway was marked by intersections varying in volume of cross traffic, irregularly placed and spaced, and the choice involved either a signalization of (1) the more heavily traveled cross streets without regard to smoothness of movement upon the principal thoroughfare, or (2) those intersections that would permit a progressive movement upon the artery.

Spaced for Progressive Movement

The first method placed emphasis upon control at the intersections that would normally warrant the installation of lights upon the basis of volume of traffic crossing the artery. In view of the fact that these locations had no symmetric relationship to either one another or to the system, and would therefore not permit balanced movement in both directions, this method forecast an uneven progress upon the principal thoroughfare, punctuated with stops and starts along the entire route.

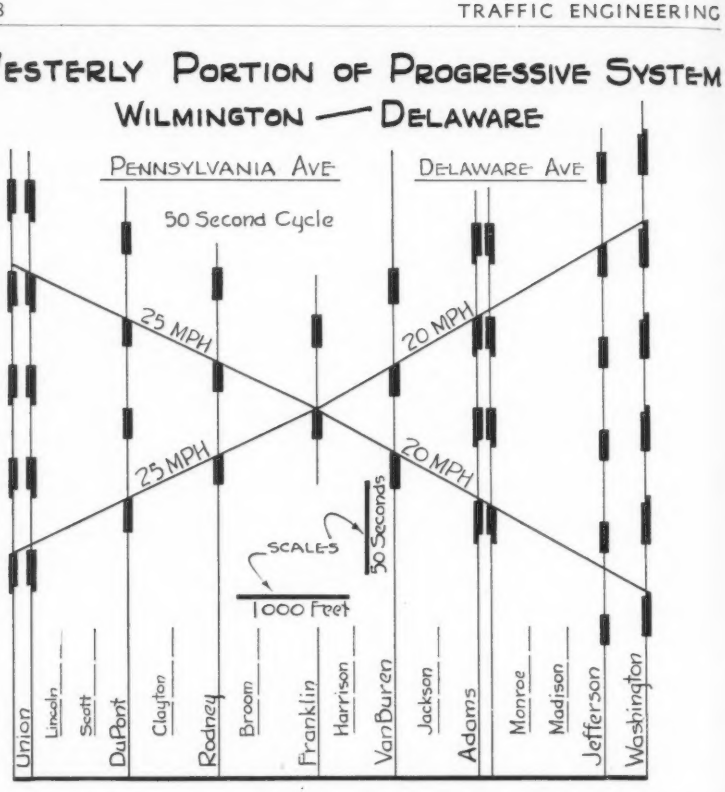
The second method promised a smooth progressive movement along the artery and made certain the much easier crossing of that stream of cars at any point within the signalized stretch of highway. At twenty to twenty-five miles an hour even the more heavily traveled cross streets would be measurably benefited, particularly since the charts indicated that platoons from each direction cleared the in-between streets reasonably well.

Considering that approximately 18,000 cars per day rolled along the artery, and that volumes across it varied from 1,000 to 4,400 cars, it was therefore decided that the second method offered the greatest benefits and installations were immediately started.

As it became apparent that at least one important cross street was not scheduled for signal installation, although the adjacent ones were to be stations in the system, several opinions in opposition were expressed concerning the soundness of the principles underlying the plan. Developments later supported the original conclusions, however, and successful operation of the project brought the admission that the results fully warranted this departure from hitherto orthodox methods of signalization.

16 Intersections Signalized

There is at present operating upon these streets a series of sixteen installations spaced from 800 to 900 feet apart, permitting two-way progression in the more densely populated section at



20 miles per hour, and in the predominantly residential portion at 25 miles per hour, all properly signed to indicate the speed. Movement at these speeds is perfect inbound, and with the exception of one short block, perfect outbound.

The system includes one intersection equipped with an auxiliary fire alarm control, one with flood-warning lights and gongs, another with an alternating cycle arrangement, and two with offset approaches to the principal thoroughfare.

At Delaware Avenue, 11th and Washington Streets, the normal traffic periods may be interrupted by pressure of a button within the fire station located close to the multiple intersection, as shown by Diagram A. Presently set for an interval of one minute, the automatic timing relay throws the signal indications to hold approaching vehicles at the locations shown by the solid darts, and permits clearance of those indicated by open ones.

By this arrangement the approaches and the intersections are cleared of moving vehicles, and open lanes provided for the fire apparatus.

At the end of the interval, another of like duration may be initiated by a second push of the button, or the traffic control mechanism may be permitted to automatically return to normal operation.

Flood Warning Feature

At Pennsylvania Avenue and Union Street, the elimination of a railroad

grade crossing some 40 years ago resulted in an underpass considerably below the original street grades, and created a low area that became the place of convergence of watersheds draining to this point from all four directions. By reason of the fact that street floodings to a depth of four or five feet occurred but several times each rainy summer season, and that merely inconvenience to motorists was involved, it was decided to properly signalize the intersection for warning until such future time as an expenditure of a quarter of a million dollars for an auxiliary sewer was authorized.

In addition to the regular traffic control equipment, a four-inch cast iron pipe connected with sewer inlets, housing a rigid copper wire responsive to a float supporting the lower end, and attached to a mercury single throw switch at the upper end, was erected vertically at the low point of the intersection. Water rising in the sewer and upon the street actuates the float, and in the event that the water depth upon the roadway exceeds 12 inches the mercury switch closes a circuit to the controller that in turn closes a relay, throwing all of the intersection signals to red indication, at the same time operating large gongs at either side of the overhead railroad bridge. This combination of visible and audible warnings serves to prohibit traffic movement across the flooded section, and indicates that the detour route must be followed.

As soon as the water has fallen below the set level of 12 inches, the float drops, the circuit is broken, and the lights resume normal operation.

During the time that the flood indications remain operative, vehicular traffic is directed to adjacent streets as shown upon the accompanying Diagram B.

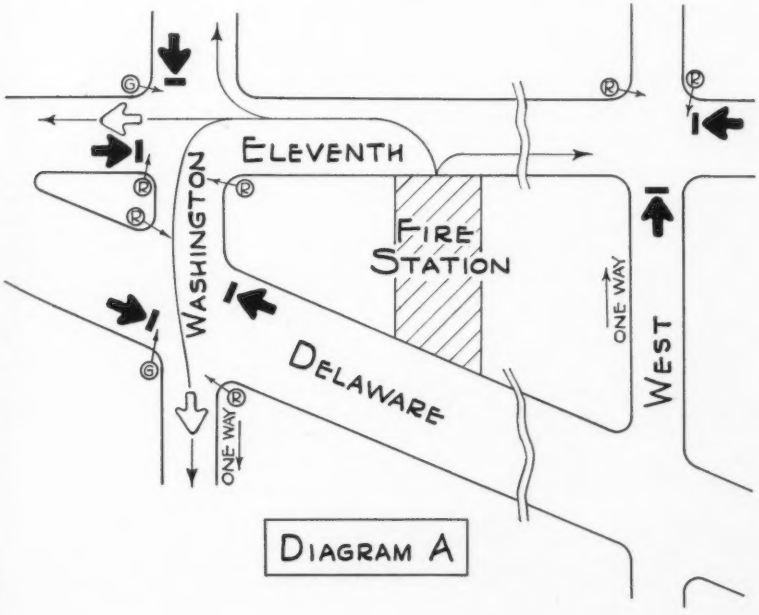


DIAGRAM A

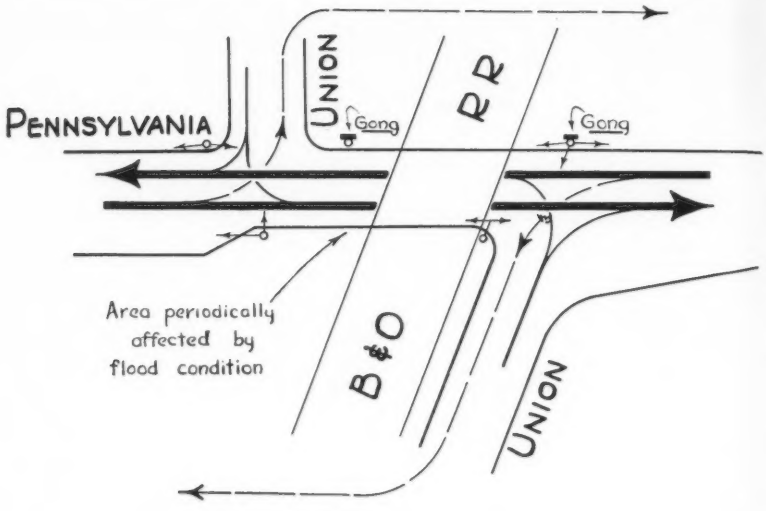


DIAGRAM B

At another intersection the unusual division of volumes, plus the decision to maintain the unit in co-ordination with the balance of the progressive system, led to an alternation of traffic movement upon the secondary streets, as shown by Diagram C.

Synchronous Interconnected System

Synchronous motor controllers at each of the 16 intersections are fed from the local power supply at their respective locations, and are interconnected by means of a three-wire installation along the entire system, one wire for resynchronizing each controller once every cycle by a supervisory controller, one wire for remote signal shutdown, and one common return wire.

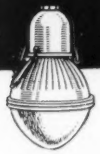
A 50-second cycle is used throughout the system, with an average of 63 per cent to the thoroughfare and the balance to intersecting streets.

Generally Improved Conditions

As a result of the installation of this series of controls along the thoroughfares mentioned above, the former tendency to race along the artery has been curbed appreciably, particularly since each signal indication ahead is in turn clearly visible to the driver in his progress through the system, and speeds of 50 miles per hour—common even with police supervision in the days past—are no longer observable.

Unfortunately, official accident records prior to 1937 are not available, and a comparison of statistics "before and after" is not possible, but it is not beyond reason to state that the record has been definitely improved. During the eight full years from 1937 through 1944 the number of reportable vehicular accidents averaged but 1.5, and those involving motor vehicles and pedestrians averaged but 0.6 per signal-

COMBINES ALL the Economy Factors and Lights All Kinds of Streets



THE LONG-LIVED FORM 79 LUMINAIRE meets the various illumination needs of all your streets. It conforms to your standard installation practices. It is adaptable to your normal maintenance procedure. And—it accomplishes all these things in a single, basic, low-cost design.

LESS BREAKAGE

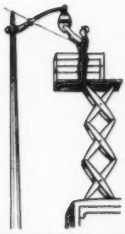
Breakage, as well as light loss from dirt accumulation, is reduced because the reflector and globe are spun-sealed together into a single unit. A gasketless, pressure seal joins the reflector and hood.

VARIETY OF LIGHT DISTRIBUTIONS

With the choice of four types of light control, you can have a safe level of light on streets of any type and width, at spacings that afford savings in equipment investment.

ANY POWER SUPPLY

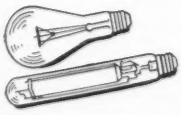
The Form 79 is available with sockets for multiple, straight-series, or series-with-insulating-transformer operation. All are properly and rigidly mounted to assure the correct and permanent focus of the lamp in its reflector.



EASY RELAMPING

To reach the lamp, just unlatch the spun-sealed reflector from the hood. A sturdy chain suspends the reflector from the hood during servicing. For inaccessible spots, two alternate types of detachable globe holders can be used.

CHOICE OF LIGHT SOURCE



Form 79 is not limited to regular tungsten-filament lamps. If you want the economy plus the attractive color of long-life Mazda-H mercury lamps (either 250 or 400 watt) the Form 79 is equally applicable.

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G-E specialists are at your service if you need help in selecting the right Form 79 for your needs. Bulletin GEA-2276E, just off the press, is packed with answers to your questions about this luminaire. Ask your G-E office or write Apparatus Dept., General Electric Co., Schenectady 5, N.Y.

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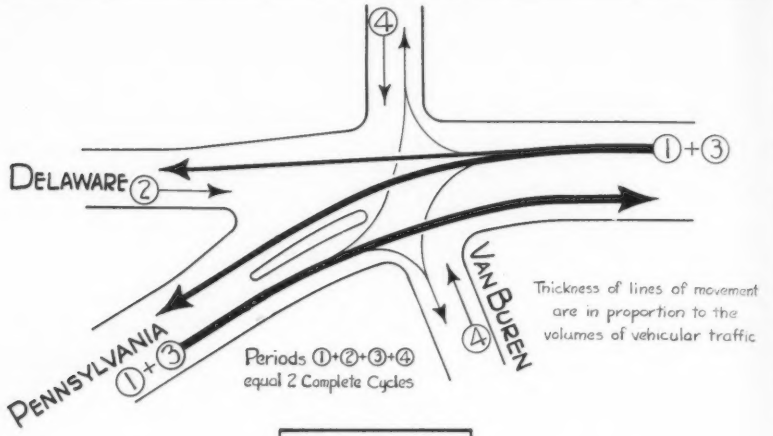

DIAGRAM C

ized intersection annually, and at several locations the accident record remained clear for intervals of over three years.

It may moreover seem strange that the record for the remainder of the intersections—those between signalized ones—has been even better, the average indicating but 0.9 accident per intersection annually, and at two of these there has not been even one reportable accident throughout the eight years.

These records are an eloquent reminder that the curbing of inordinate speeds is perhaps the most important factor in accident reduction, and that official restraint of traffic movement, when based upon sound engineering principles, is most likely to promote public co-operation and encourage willing compliance.

Several other conclusions may also be drawn. One is that control signals spaced at reasonable intervals along the artery, and interconnected to insure progression at a set speed, will also benefit to a considerable degree the in-between streets that are not signalized. Another is that drivers accept with grace the imposition of controls that merely compel a reasonable rate of progression, becoming impatient and inclined to speed only in an effort to "beat" lights that require frequent stopping and starting of the vehicle.

Finally, many values not measurable by statistics have attended these controls, and it is probably not fantastic to intimate that tempers reaching into home and office, and to a certain extent even the health and welfare of the community, have been favorably affected.

★ ★ ★

INSTITUTE ACTIVITIES 10 YEARS AGO

Taken From Traffic Engineering, Jan. 1936

Five articles by I. T. E. members rated as "The Year's Best" by *Traffic Bulletin* . . . U. S. Bureau of Public Roads develops traffic recorder for automatic traffic counts in state surveys . . . Hawley S. Simpson awarded Arthur M. Wellington Prize by A. S. C. E. for paper on use and capacity of city streets . . . Franklin M. Kreml receives gold key award from Junior Chamber of Commerce for traffic work in Chicago area . . . Many I. T. E. members working on planning surveys in progress in 36 states.

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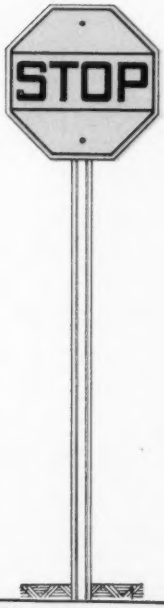


The Hunt Company, 2405 W. McNichols Road, Detroit 21, Mich.

PLANNING EXPERTS RECOGNIZE NEED FOR TRANSIT

Experts in the fields of highway construction and city planning are giving increased attention to the vital role of public transportation in the life of the community. Recent statements by three well-known authorities echoed theories that transit management has been propounding for some time.

Everyone Can't Drive A Car

Robert Moses of New York City, for example, was quoted by "The New York Times," as saying, "It is simply impossible for everyone to drive a private car right up to a store and expect to have it taken care of somehow for half an hour or whatever time is required for shopping."

Across the continent, L. Deming Tilton, director of planning for the San Francisco City Planning Commission, made this simple and clear description of highway building for maximum utilization:

Freeway Like A Pump

"Freeways have their greatest usefulness and value when they are planned and built as a multiple-purpose system. The freeway is like a huge pump. If only private motorists use it, a deluge of cars will flow into the congested areas. We must put buckets under the pumps. Downtown parking terminals must be made a part of the freeway system. Moreover, we should plan the freeways for rapid transit services. The speed and safety of this modern traffic channel should not be denied to citizens willing to ride in a bus. When smooth, comfortable bus service operates on a freeway, the private automobile is left at home in a garage standing on relatively cheap land. We can have a regional transit system based largely on an extensive network of freeways but only if the freeway system is properly designed. Building a system of freeways for the San Francisco region is one of the biggest postwar jobs ahead of us."

And then John P. Lynch, chief of the planning survey section of the Division of Highway Transport Research of the Public Roads Administration, sounded a warning which should lend support to arguments by public transit officials that fabulous funds should not be spent for street and highway improvements until sufficient data have been obtained showing the desired lines of travel.

Good, But Insufficient

In an article on "Traffic Planning Studies in American Cities," Mr. Lynch described the various methods commonly used to determine highway user requirements—such as interviewing drivers at points along state highways entering cities, observing license numbers as vehicles pass different survey stations, questionnaires given to workers and home interviews.

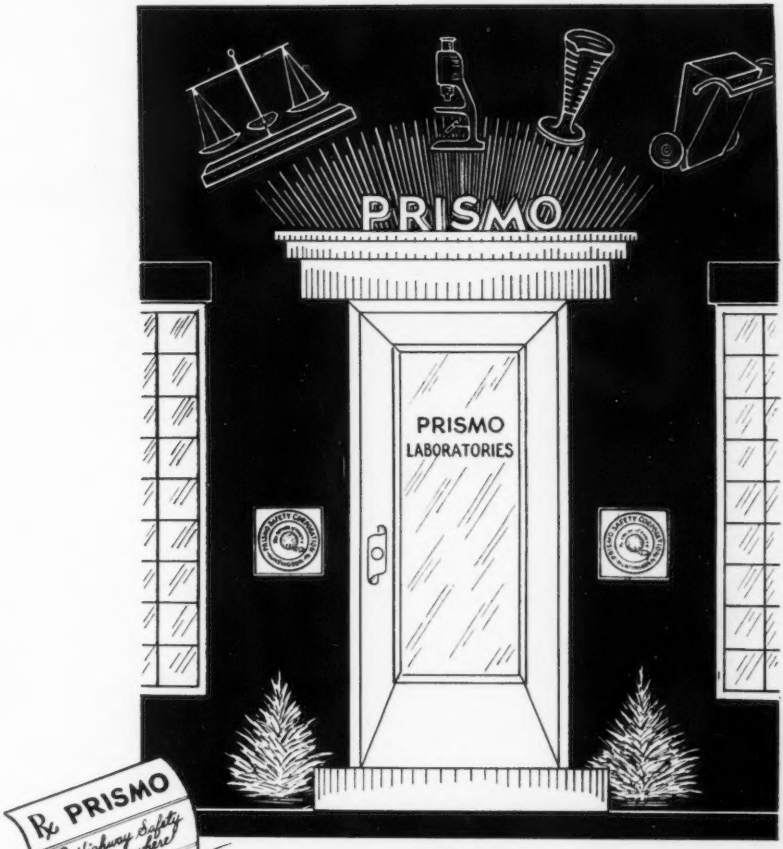
"All of the methods described," Mr. Lynch concludes, "have been extremely useful and have met the needs for which they were made. None of them, however, is sufficiently comprehensive to serve as a desirable basis for long-range highway planning envisioning the expenditure of large amounts of Federal, state and local funds."—*Passenger Transport.*

★ ★ ★

EXPRESS TRANSIT SERVICE IN ST. LOUIS

The St. Louis Public Service Co. has inaugurated a 90-day experiment of express bus operation on five main radial lines. This went into effect on Nov. 12. Buses are especially marked so that they can be easily distinguished. The fare is 10 cents. On the Cherokee Line the running time is reduced from 49 minutes to 32 minutes, which is a travel time saving of 17 minutes each way.—*Am. Soc. of Planning Officials News Letter.*

PRISMO "LIFE LINE"



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The Use of Rock Salt in Ice Removal

by LLOYD B. REID, *Member, I.T.E.*

THE first objective of every public official responsible for maintaining streets or highways is to have them usable every hour of every day of the year. In northern states, having 100 to 200 days of freezing weather annually, that becomes quite a problem. Perhaps a dozen times each winter freezing rain, slush or packed snow may bring highway transportation to a halt unless proper precautions are taken.

Today uninterrupted highway service is absolutely essential in supplying the average American community; the economic life of most towns and cities is heavily dependent upon truck transportation. Recently, the fullest and most efficient use of the nation's trucks has become more urgent than ever before, because trucks carry a large percentage of vital materials from one plant to another and from one town to another. Modern subcontracting procedure involving the use of widely separated plants has accelerated this trend in recent years. A survey of the Detroit area alone reveals that trucks handle 61 per cent of all incoming freight and 68 per cent of the outgoing, and other heavily industrialized areas would probably show a similar preponderance of essential highway traffic. Such figures point up the fact that our highways have become huge production lines tying together many factories and towns into a single manufacturing unit, and down them flow food, raw materials and finished products in an unending stream. Any interruption of this highway traffic halts the even flow of material from plant to plant and town to town, and if continued long enough, it would disrupt production schedules in many plants. Keeping the highways open 24 hours a day is part of our peacetime production job.

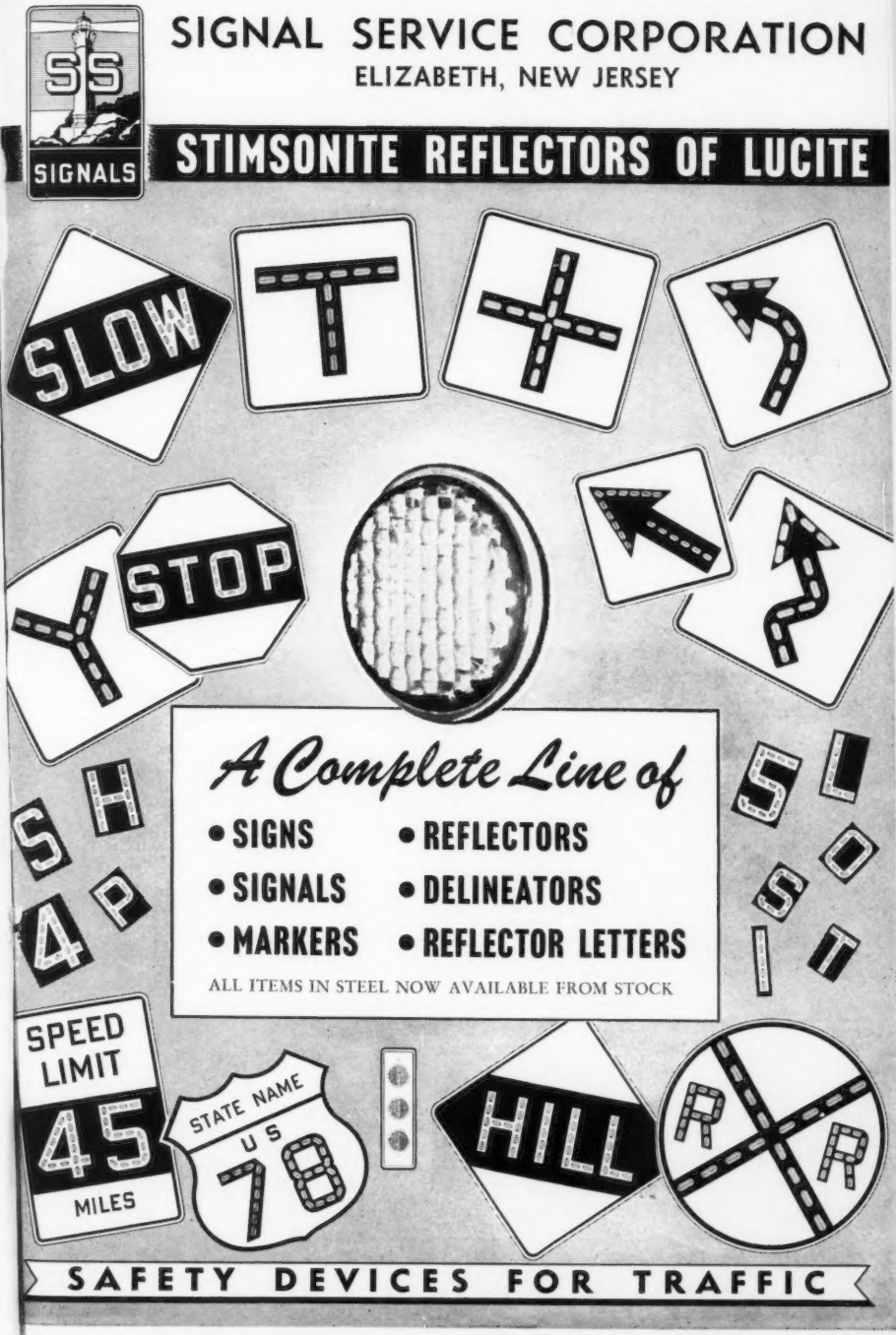
Methods of Ice Removal

In addition to the mechanical equipment used to accomplish this (trucks, plows and scrapers of various kinds) several other methods are in common use. As is usual in such a situation, however, not all of them are equally effective, and every winter the advantages of the newer and more efficient methods over the old ones become increasingly apparent. In general, these methods today include: (1) Abrasives —cinders or sand; (2) treated abrasives, and (3) rock salt.

Disadvantages of Sandpaper Roads

The application of abrasives, such as sand or cinders, to icy pavements was probably the first method used to prevent skidding. In effect this is an attempt to manufacture a piece of sandpaper, but it has many disadvantages.

For one thing, cinders are bulky, and it is therefore impractical and expensive to haul them very far from the point where they are produced—a fact which generally restricts their use only to cities and leaves rural areas unprotected. Furthermore, cinders lack uniformity in size, and cannot be used in mechanical spreaders. They are light, and the high wind that often accompanies a storm, blows them off the street. In one way or another most of them eventually find their way into sewers and catch basins, from which they must be laboriously removed at great expense by hand shovels. So, if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SAFETY DEVICES FOR TRAFFIC

New York's East River Drive a few hours after a heavy snowfall—rock salt did a thorough job.

the cost of loading, reloading, hand application, removal from sewers are all added together, what started out to be a cheap process becomes a very costly one.

Added to all these disadvantages is the fact that use of such an abrasive in a continuing storm produces a thick ice mat, as each successive layer of sand or cinders is in turn covered with a new layer of ice. Use of large cinders on a roadway surface constitutes a driving hazard, for drivers naturally seek to avoid running over them to save cutting or blowing out their tires.

Difficulties With Sand

Many of the disadvantages which apply to cinders apply also to sand, with some new ones added. Although sand lends itself to use in mechanical spreaders, it is often difficult to keep sand stock piles from freezing. In addition, sand blows off the road almost as readily as cinders in spite of the many tricks that have been tried to overcome this difficulty. In Ontario, Canada, for example, attempts have been made to heat it before it is applied, thus allowing the particles to melt their way partially into the ice. This has met with only partial success, for even if the sand is hot when loaded, it chills rapidly as it is sprayed through the cold air with a mechanical spreader. In addition, heating sand in the quantities necessary is a slow, time-wasting process—and during an ice-forming storm there is no time to waste.

To overcome these disadvantages, some engineers have tried treating abrasives with rock salt or other melting agents to keep them from freezing before use and to simplify their application. Treated abrasives, however, also find their way into sewers; their use includes handling one ton of material per mile of road to be treated; and a dangerous ice mat builds up on the road just as it does with plain abrasives.

5 to 1 Advantage of Rock Salt

When rock salt is used in ice removal work the rock salt crystals bore through the ice and compacted snow to the pavement, break them up, permitting the brine to undercut the ice or snow so that they can be easily scraped off with the standard underbody scraper. This is one of the main

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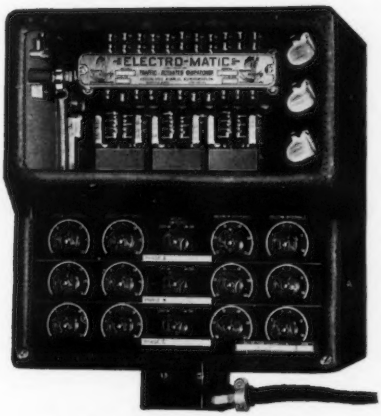

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Rock salt spreading apparatus in action.

reasons that a growing list of road engineers is adopting it as a standard tool in ice removal work. But there are others.

In the practical problem of ice removal, a truck is ordinarily assigned to patrol a distance of 15 miles. If abrasives are used, either chemically treated or plain, it takes about 15 loads to cover a two-lane rural highway in an average storm. However, if rock salt is used under the same conditions at a rate of about 400 to 700 pounds per mile, about three truck loads will cover the 15 mile length. From these figures it is obvious that a five to one saving in equipment use, manpower and material cost results. It is also evident that a great deal of time is saved in applying three loads of salt rather than 15 of abrasives. An added advantage is the fact that the rock salt helps to remove snow and ice completely, whereas abrasives only cover them up and do nothing to clean the highway. Bare highways, of course, are preferable to abrasive-covered ones and communities that use abrasives pay more and get less for their money than do those using rock salt.

Road engineers who have had little experience with these modern methods of ice removal often complain that melting agents cause corrosion of motor vehicles and scaling of concrete pavements.

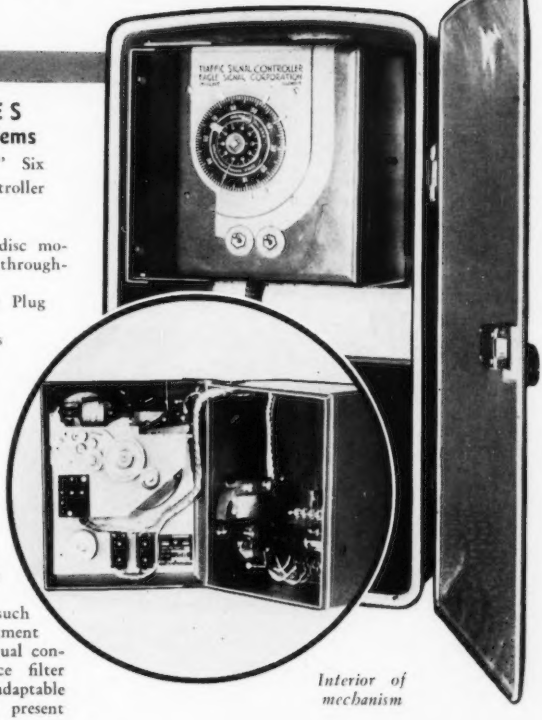
Corrosion does occur, of course, when iron, air and moisture are present. The addition of melting agents can hardly accelerate this action to any marked degree. Particularly in the case of rock salt, the brine that is formed is so weak that it causes only negligible damage, if any at all.

Corrosion Can Be Minimized

The problem is not a very important one at best, because for a number of years some automobile manufacturers have been bonderizing the metals in their cars to make them resist rust more effectively. In addition, corrosion can be further minimized by washing the under parts of the car as part of routine car cleaning. To the extent that corrosion does occur, however, it is a minor objection considering the

The new "E M"

SIX CIRCUIT SYNCHRONOUS EAGLE CONTROLLER



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- Powerful Synchronous disc motor with ball bearings throughout
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major importance of removing ice from highways. A former Public Works Commissioner of Detroit used to say, "Better a corroded fender than none at all." And better a rust spot on a muffler than the many deaths caused each year by failure of those responsible to remove ice from pavements promptly and completely.

Safe for Use on Present Day Roads

Rock salt has no adverse effect on bituminous, brick or unpaved roads, but the scaling of concrete pavements, due to a number of causes, has sometimes been attributed to the use of calcium chloride and rock salt. As a matter of fact, when concrete road surfaces are four years old there is little danger of chemicals affecting the pavement, because its pores are then filled with a film of oil or grease, according to bulletins published by the Portland Cement Association. Since practically no roads have been built since 1941, they are now so seasoned that rock salt may be used on them without harmful effect. As for new roads, Portland Cement manufacturers are now producing a cement with air-entraining properties, which they claim produces a scale-proof concrete.

ESTIMATING WINTER SEVERITY AND SALT NEEDS

Since snow and ice conditions vary throughout the snow-belt area, commissioners often experience difficulty in using standardized compilations of winter weather information either to forecast their winter needs or to keep informed of storms in progress. As a result, many of the road and highway departments have developed systems of their own to fit their individual local problems in gathering such data. The experience of some commissioners indicates that the total cost of obtaining detailed winter road reports during storms comes as high as $50 a day in some sections of the country, much more in others.

Important to Plan Ahead

While this on-the-spot coverage is necessary, it doesn't help in planning *ahead* for the unusual and unexpected snow and ice emergencies that must be anticipated every year. To get around that difficulty, some commissioners use annual precipitation figures to forecast the overall severity of winter for their region. They take the annual precipitation figure for the area, subtract summer rainfall from it and put the remainder down as snow and freezing rains.

While this may not always be accurate to a fraction of an inch, since winter weather varies from year to year, commissioners using the method report that it is a fairly precise way of forecasting winter snow and ice possibilities. They find it useful in making a good guess about how much equipment, material and manpower they will need in the months ahead.

Salt Does 75 P. C. of Job

Using it, commissioners who rely heavily on tested short cuts and labor-savers like rock salt can plan ahead and lay in sufficient supplies of it early in the season against the time when the first snows begin. Applied immediately at the start of a storm, rock salt does about 75 per cent of the snow and ice removal job. The salt crystals bore through ice and snow, break them up and prevent them from bonding to the pavement. As a result, when the plows go out, the salt has already done part of their job. In light falls, the rock salt alone is sufficient to melt the snow and the plows are not needed.

In addition to providing a dependable way of predicting the amount of materials he will need for the winter, the forecast method also aids the commissioner in planning his yearly budget. Using it, he can tell with a fair degree of accuracy just how much he must allocate for supplies, equipment and manpower during the months to come. —*Roads and Streets, Oct.*, 1945.

COUNTIES Solve Traffic Problems With

Traficounter

The Traficounter is used by scores of county highway departments throughout the country. Here is a typical comment, from the office of a county highway engineer regarding the excellent use being made of these precision built instruments.

"We have four Traficounters and find that they are a great help in getting continuous traffic count of certain sections of road. Our County road system is surfaced largely with pit run gravel and we have now reached a stage where—in our Post-War construction—we will have to do considerable regrading and bituminous surfacing.

"Traffic counts taken before gasoline rationing are proving valuable in determining what roads should be included in this program from a traffic standpoint."

This "lightning fast" automatic counter of motor traffic consists essentially of an electric counter and recorder which registers the count of cars that pass the detector. **Streeter - Amet Company, 1726 Belle Plaine Avenue, Chicago 13, Illinois.**

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The Song of the Traffic Engineer

(Apologies to Longfellow)

If we all were traffic minded,
If our signals all were standard,
We could call upon our neighbor,
Call with pride, his strict attention
To the strides of engineering
That have lessened our congestion.

If our signs and pavement marking
Were, in fact, all up to standard,
We could rest with satisfaction
Knowing that the job completed
Would result in fewer mis-haps,
Fewer accidents and tie-ups.

Application of experience
With sufficient information
And with checks before and after
We can change the situation,
Change the pattern for the better,
Make the highways better, safer.

So to Traffic Engineering,
A profession, sound and useful
Let us pledge our strong allegiance,
Pledge our constant time and study
That our efforts be considered
Beneficial to the nation.

—*H. G. Eckhardt (Mem. ITE)*

I.T.E. COMMITTEES

Word comes from Thomas Seburn, I.T.E. president, that this year there has been more enthusiasm throughout the membership to serve on committees than ever before. Institution committees for the current year are as follows:

RESEARCH—E. H. Holmes, chairman; David M. Baldwin, R. H. Sawyer, B. R. Greenshields, Earl Allgaier, D. J. Faustman, Allan R. Pepper, E. F. Clark, E. P. Goodrich, Charles Adler, Jr., George W. Howie, M. A. Bebee, Wortham Dibble, Thomas Willier, M. O. Eldridge, S. H. Taylor, T. E. Forbes, W. Sherman Smith, R. B. Lutz, M. A. Butcher, E. L. Ericksen, Armand E. Keeley, Ross T. Shoaf, Philip X. Rice, Charles W. Prisk.

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In a survey conducted two years ago by American City magazine it was disclosed that "Cities which have made recent improvements evidence greater interest in further improvements than do those cities with 1922 to 1927 installations."

In a recent article, the Director of Public Works of Flint, Michigan, pointed out that, "Since the first stage of Flint's street lighting program was completed, the City Commission has been besieged from all parts of the city for additional street lighting."

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The only places where street lighting isn't noticed or *valued* are places where it has never been properly installed.

For details on today's better street lighting equipment and methods... for news on what neighboring communities are doing... for facts on costs, *and savings* — contact your electric utility company today. The Street and Traffic Safety Lighting Bureau, 155 East 44th Street, New York 17, N. Y.

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ANNUAL PROCEEDINGS—William B. Powell, editor.

MONTHLY PUBLICATION—Richard W. Siver, editor; Norman Damon, circulation manager; William B. Powell, special publications; Charles W. Prisk, technical editor; F. B. Crandell and H. M. LeRoy, associate technical editors; George Fisher, Fred W. Hurd, Herbert A. Keegan, James E. Reading, M. M. Todd, Margaret Woolverton, associate editors.

REVISION OF CONSTITUTION AND BY-LAWS—T. T. Wiley, chairman; John H. Mitton, Raymond Riegelmeier, W. Graham Cole, J. A. Czizek.

SPECIAL COMMITTEE ON MEMBERSHIP REQUIREMENTS—Joseph L. Wehmeyer, chairman; William McConochie, Virden A. Rittgers.

COOPERATIVE ACTIVITIES—Robert A. Mitchell, chairman. *A. S. A. Committee on Grade Crossing Protection D-8*—Alger F. Malo, representative, and John Moriarty, alternate. *A. S. A. Sectional Committee D-7*—Dwight M. McCracken, representative, and Nathan Cherniack, alternate. *A. S. A. Traffic Standards Committee*—Robert A. Mitchell, representative, and Raymond Riegelmeier, alternate. *Highway Research Board*—Roger L. Morrison, representative, and I. S. Shattuck, alternate. *I. A. C. P.-I. T. E. on Warrants for Traffic Officer Control at Intersections*—Ralph F. Michel, chairman; W. C. Brandes and G. R. Fencl, representatives. *I. E. S. Joint Committee on Highway Lighting*—Henry W. Osborne. *Joint Committee on Uniform Traffic Control Devices*—D. Grant Mickle, chairman; William Brandes, Harold Hammond, Ross C. Harger, Robert A. Mitchell, Thomas J. Seburn, Leslie J. Sorenson. *National Committee for Traffic Safety*—Thomas J. Seburn, representative, and Harold F. Hammond, alternate. *National Conference on Uniform Traffic Accident Statistics*—T. Elmer Transeau, representative, and Wilbur S. Smith, alternate. *Joint Committee on Speed Control*—Wilbur S. Smith. *Joint Committee on Traffic Engineering Functions and Administration*—D. Grant Mickle, chairman; Lloyd Braff, T. M. Matson.

TRANSIT OPERATIONS—John B. Ecker, chairman; Keneth Hoover, Hawley Simpson, Leslie Williams, Welton W. Harris, Hadley B. Cammack, Dwight McCracken, Stuart M. Bate, Harry D. Kamy, J. S. Baker, A. C. Hough, V. A. Rittgers, J. Al Head, K. S. Vaughan-Birch, K. A. Bevins, C. S. Cunningham, J. F. Gallagher, Henry A. Barnes, A. J. Naquin, T. M. Vanderstempel, M. C. Stark.

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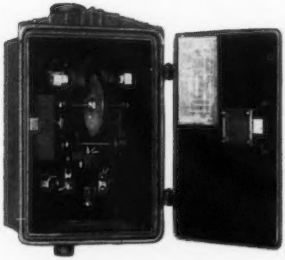

Type TSS18 Flasher

Type TST111D Signal and Sign

REDUCE THOSE ACCIDENT HAZARDS!

Type TST111D is a flashing signal equipped with an auxiliary reflector and receptacle for illuminating an information or warning sign mounted on the signal supporting post. The auxiliary reflector accommodates a 100-watt lamp and gives excellent illumination of a 24" x 24" sign.

A glass cover is furnished on the sign light to protect the lamp and reflector. Mounting of the signal is by means of a 2" slipfitter which is cast integral with the auxiliary reflector.

Type TSS18 flasher provides for flashing the signal, while the sign light is on continuously.

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Washington Section Of I. T. E. Meets

The Washington Section had its best attendance of the season on December 5, 1945, when 37 members and guests attended a dinner meeting at which Lt. Col. Frank Kreml told about his work in Africa and Italy. As Chief, Transportation Section, Fifth Army, he had faced new problems in traffic control that were almost unbelievable. Burton Marsh introduced the following guests, many of whom were out-of-towners attending meetings of the Joint Committee on Uniform Traffic Control Devices held in Washington that week:

M. A. Bebee, D. K. Chacey, Edgar F. Copell, George Fisher, H. L. Guiney, Ross Harger, J. W. Johnson, A. D. Kennedy, Dean J. Locke, Carl McMonagle, Robert A. Mitchell, Harry Neal, Don Opstad, Harry Porter, Jr., Walter Rosenwald, George M. Shepard, C. W. Stark and C. R. Waters.

Members present were: Earl Allgaier, L. A. Andriacchi, W. F. Boardman, J. B. Ecker, M. O. Eldridge, W. G. Eliot, 3d, H. F. Hammond, R. S. Holmes, E. H. Holmes, D. W. Loutzenheiser, B. W. Marsh, D. G. Mickle, J. H. Mitton, O. K. Normann, C. W. Prisk, W. L. Robinson, M. C. Stark, C. G. Stoneburner and R. G. Jasper.

New York Section Holds Meeting

A meeting of the New York Section was held in New York on Dec. 11. Eight members gathered for an enjoyable dinner and for the business meeting and discussion which followed. Nathan Cherniack acted as chairman in the absence of Theodore Matson, Section president.

After various matters of old and new business were attended to, Nathan Cherniack gave a most enlightened stimulating talk on some of the economics of parking and congestion with particular reference to the central Manhattan district of New York. A very lively discussion followed in which John Gibala shed some interesting facts and figures relative to New York City's traffic trends.

Those in attendance were: Nathan Cherniack, Bruce Greenshields, Harry Koch, John Gibala, Thomas Willier, Herbert Keegan, Roger Gilman and Richard Siver.

Seburn and Smith Meet in New York

Thomas Seburn, our active president, and Wilbur Smith, secretary-treasurer, met in New York December 13th and 14th for the purpose of dealing with Institute affairs.

This is a good indication that no grass is growing under the feet of the I.T.E. officers in the pursuit of affairs of the Institute. In passing, we might express the appreciation of the membership for the time and effort that these and other officers devote to the work of the Institute and the furtherance of the traffic engineering profession.

L. R. Fort's Death A Loss To The I. T. E.

The Institute of Traffic Engineers suffered a real loss Dec. 16 in the passing of Leslie Runyon Fort, 62, of Plainfield, N. J. While the majority of I. T. E. members probably were not acquainted with him, Mr. Fort, as president of the Interstate Printing Corp., which publishes "Traffic Engineering," nevertheless has been close indeed to the affairs of the Institute in his behind-the-scenes role.

During the years, Mr. Fort always has been ready to co-operate in every way possible with the several editors of the magazine, and there is no ques-

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tion but that the time, effort and patience he has contributed has had a great deal to do with the continuing success of "Traffic Engineering." Mr. Fort's willing assistance aided particularly during the war period when the printing industry was beset with difficulties that at times seemed insurmountable.

Mr. Fort, son of the late John Franklin Fort, a former governor of New Jersey, was a newspaperman for many years, serving first as publisher of "The Lakewood (N. J.) Times and Journal," and later as publisher of the Plainfield "Daily Press." He was active for many years in civic activities in Plainfield.

To his son, Mr. Osmun Fort, who carried on in the shop during his father's illness, and to other members of the immediate family, the I. T. E., through the pages of "Traffic Engineering," wishes to offer its most sincere sympathy.

PERSONALS

Jim Darrell has returned to the Minnesota Highway Department as assistant traffic engineer. Reports indicate that he has been cured of the skin ailment contracted while serving in the Pacific.

Dr. T. W. Forbes is sailing this month for Honolulu to take up work as associate professor of psychology at the University of Hawaii. Ted's many friends, and particularly those in the traffic field, will miss him, and will hope that his full time position in psychology will not mean that he will sever his connection with the several important research aspects of traffic control to which he has contributed so much.

Henry Evans has been discharged from the Army, and was expected home by Christmas. He is on leave from the National Conservation Bureau and is expected to return to that organization sometime this month.

Winn Carsten, who is still stationed in the Philippines, recently sent a miniature bolo knife to the secretary. There was no indication as to when Winn expects to be back in the States, and an active Traffic Engineer again.

Thomas Walbert has returned and is now a professional consulting engineer in Little Rock, Ark. Mr. Walbert has been making a parking study and has been instrumental in obtaining approval of extensive improvements of the traffic signals in the city.

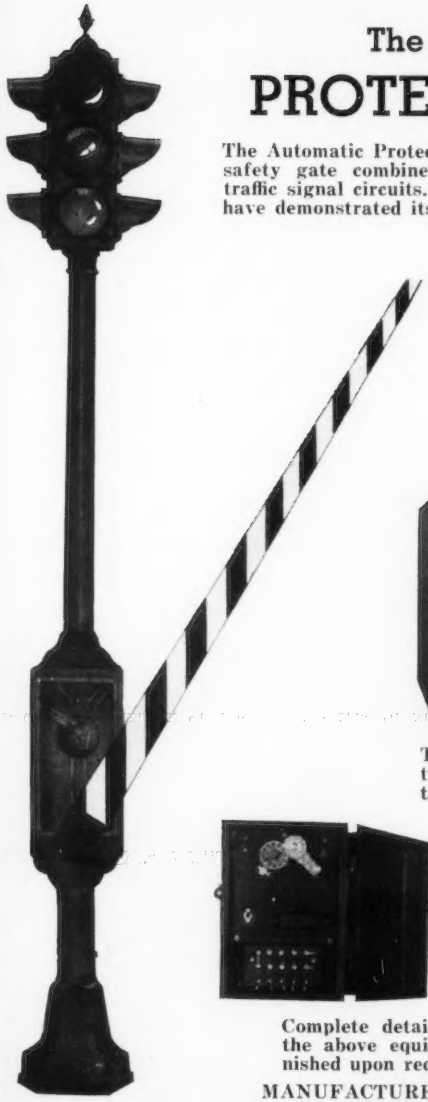
Control Devices Committee Meets

The National Committee on Uniform Traffic Control Devices met in Washington, Dec. 5-7, for the purpose of reviewing sections for a revised manual on uniform traffic control devices. Mr. H. E. Hilts, deputy commissioner, U. S. Public Roads Administration, is chairman of the committee, and presided at all sessions. The I. T. E. is one of three agencies constituting the national committee. The others are the American Association of State Highway Officials and the National Conference on State and Highway Safety. The following members of the I. T. E. were present:

Ross Harger, Ed. Copell, Harold Hammond, Robert Mitchell, Burton Marsh, Charles Prisk, D. W. Loutzenheiser, George Fisher, Wilbur S. Smith, Walter Rosenwald, Harry Neal, Grant Mickle, Graham Cole, Maynard Bebee, W. G. Eliot, Carl McMonagle and Harry Porter.

Marbelite Co. Purchases Division of Signal Service

The Marbelite Company, Inc., of 26

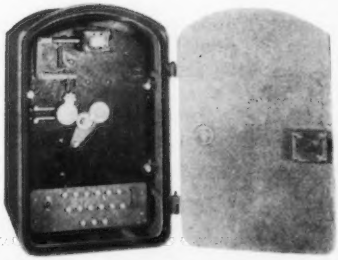


The Automatic
PROTECT-O-ARM

The Automatic Protect-O-Arm consists of an improved safety gate combined and controlled from standard traffic signal circuits. Its effectiveness and popularity have demonstrated its place in the safety field.

TRAFFIC SIGNAL CONTROLS

Designed and manufactured according to standard or individual specifications.



Type 99-RM5—Traffic signal controller, equipped for remote operation.

Type 99-A — Standard. 6 - circuit. synchronous, heavy duty traffic signal control.

Complete detailed information on the above equipment will be furnished upon request.

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Southern Switch & Signal Co.

Shreveport, Louisiana

"THERE IS NO SUBSTITUTE FOR EXPERIENCE"

Warren Street, New York City, manufacturers of traffic signals, has announced that it has purchased the Traffic Signal & Controller Division of the Signal Service Corporation, of Irvington and Elizabeth, N. J., and is moving the entire equipment to its New York plant. Marbelite will continue to manufacture controllers, signal heads and signals as formerly produced by the Signal Service Corporation as well as the Marbelite Company, Inc.

Anton Diebold, who was formerly manager and engineer in charge of the Signal Service Traffic Signal Division, will enter the Marbelite firm as vice-president and manager. Charles C. Lenz is president of the Marbelite Company, Inc., which has been active in its line since 1923. The acquisition of the Signal Service Corporation Signal Division and patents, broadens considerably the line now being manufactured by Marbelite.

Looking Ahead

The 25th annual meeting of the Highway Research Board will be held at the Skirvin and the Skirvin Tower Hotels, Oklahoma City, Jan. 25 through 28. Research has not been idle during the past year and there are many papers and reports to be presented and discussed. An important feature of this annual meeting will be conferences by the departments of the board on the formulation of a national program of highway research. Arrangements have been made to give those who attend preference for hotel reservations. Address request for hotel reservations to: Hotel Reservation Committee, Highway Research Board, 900 Commerce Exchange Building, Oklahoma City, Okla.

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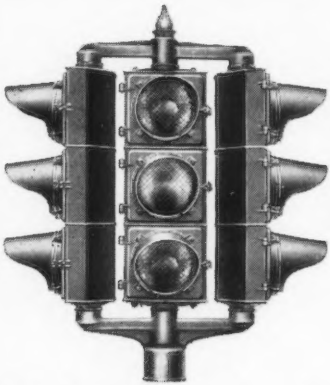


IMPORTANT ANNOUNCEMENT

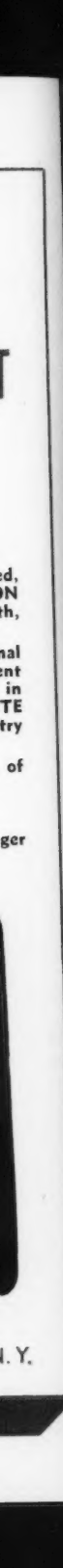
The Marbelite Company, Inc. is pleased to announce that it has acquired, through purchase, the TRAFFIC SIGNAL AND CONTROLLER DIVISION of the SIGNAL SERVICE CORPORATION of Irvington and Elizabeth, New Jersey.

We are now in a position to supply all necessary parts for the former Signal Service equipment, and furnish complete traffic signal installation equipment of the type manufactured by the Signal Service Corporation. This is in addition to all the equipment now being manufactured by the MARBELITE COMPANY, which has been faithfully serving the traffic signal industry since 1923.

Marbelite's twenty-two years of service in this field is our guarantee of continued quality and service as in the past.

Charles C. Lenz—President

Anton Diebold—Vice President and Manager
(Formerly Manager of Signal Service Corporation, Signal Division)

THE MARBELITE CO., INC.

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